# Prolonged Field Care

Prolonged Field Care (PFC) was a concept born and developed by the military. Initially developed by special forces - where casualty evacuation may be significantly delayed due to operational pressures. The standard military definition is:

*'Field medical care applied beyond doctrinal planning timelines to decrease patient mortality and morbidity. Prolonged field care uses limited resources and is sustained until the patient arrives at the next appropriate level of care.'* (Defense Health Agency, 2018)

The concept of PFC can be equally applied to civilian practice in remote, rural, austere or even urban settings (O'Kelly & Mallinson, 2023). Incorporating PFC into your patient assessment and management represents a paradigm shift to improve patient outcomes.

The **Minimum, Better, Best** framework considers the level of care you can be provide to your patient during PFC. The specific contents of each level can be adjusted depending on operational context and best evidence. These levels can be placed into the logistical context of; **Ruck, Truck, House and Plane**. This provides structure for the level of care which can feasibly be provided within logistic limitations (when working out of a rucksack, a vehicle, a clinic or building or a retrieval platform).

**Minimum, Better, Best** facilities when aligned to the operational restrictions of **Ruck, Truck, House and Plane** should be considered in relation to the **12 capabilities**. These are 12 domains of essential patient care (see table).

**H**ead-to-toe examination
**I**nfection control
**T**ubes & Tidy
**M**edications
**A**dministration
**N**ursing Care

**HITMAN** (*head-to-toe examination, infections, tubes (and tidy), medicines, administration, nursing care*) is the core structure for PFC. It is used internationally to guide the provision of PFC patient care (O'Kelly, 2012, Smith et al, 2021). Each element can be considered in terms of minimum, better, best, but all elements should be addressed for patients who are under your care in a PFC setting.

The acronym **SHEEP VOMIT** is used for the nursing care elements of PFC (Jarvis and O'Kelly, 2016; O'Kelly, 2018; O'Kelly & Mallinson, 2023). While we often refer to these tasks as *nursing care*, this is actually outdated terminology as patient care is the responsibility of every healthcare provider.

**S**kin Protection
**H**ypo-/Hyperthermia
**E**levate Head
**E**xercises (ROM)
**P**ressure Damage
**V**ital Signs
**O**ral Hygiene
**M**assage (DVT)
**I**ns & Outs
**T**urn/Cough/Deep Breath

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| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| | **Monitoring** | **Resuscitation** | **Oxygenation & Ventilation** | **Airway** | **Analgesia & Sedation** | **Physical Examination & Diagnostics** |
| **Minimum** | Manual BP cuff, Manual pulse check | Crystalloid, tranexamic acid | Pocket mask | Manual manoeuvres, simple airway adjuncts | Non-opioids (paracetamol, ibuprofen, penthrox etc) | Physical examination |
| **Better** | ETCO2, pulse oximetry, 3-lead ECG | Freeze dried plasma, | Back-valve-mask, Oxygen concentrator | Supraglottic airways | Opioids (Morphine), conscious/ procedural sedation | Point of care ultrasound & blood testing |
| **Best** | 12-lead ECG, ideally with telemetry (*see 9*) | Access to all blood products | Portable ventilator, cylinder or piped oxygen | Intubation and surgical airway, general anaesthesia | Enhanced analgesia (e.g. ketamine), regional anaesthesia, general anaesthesia | Formal laboratory testing |

| | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|
| | **Nursing & Hygiene** | **Surgical Interventions** | **Telemedicine** | **Packaging & Retrieval** | **Logistics and Planning** | **Communication** |
| **Minimum** | Patient is kept: clean, warm and dry, with head elevated | Needle chest decompression, needle cric | Audio contact with senior clinician (e.g. telephone or radio) | Understanding of the physiological stressors during transport | Have a planned chain of care and evacuation. Understand common location specific health threats. Have a logistics plan | Voice comms with at least one redundant system for basic data transfer (text messaging) |
| **Better** | Full adoption of SHEEP VOMIT care | Surgical airway, thoracostomy, chest drain insertion, amputation | Audio-video contact with senior clinician, non-live transmission of diagnostic results (e.g. ECG, Ultrasound images) | Trained in critical care transport on land | Have practiced patient evacuation with clear routes of referral. Clear plans for supply and re-supply of equipment. | Plans in place for voice and data comms. Ideally aligning to a PACE comms (Primary, Alternative, Contingency & Emergency) |
| **Best** | Full nursing care | Lateral canthotomy, resuscitative hysterotomy, thoracotomy | Audio-video contact with senior clinician with live telemetry of diagnostic imaging (ECG, Ultrasound etc) | Experienced in transport of critical care patients by land and air | Regular practice and current operational experience of working in the environment in question. | Multiple systems (with redundancy) for data, video and voice comms |

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| H | Head to Toe | A full head-to-toe examination should identify all apparent or developing injuries. These should then be documented clearly. |
| I | Infection | All wound should be irrigated with at least 2 litres of potable water. Appropriate dressings should be applied. Antibiotics should be commenced and continued with regular dosing. |
| T | Tubes & Tidy & Tourniquets | All wires and tubes should be neatly arranged, free from knots and tangles. Omental taping should be used when taping tubes or wires to the patient's skin to reduce risk of pressure injury. Cannulas should be reviewed daily using the Visual Infusion Phlebitis (VIP) score (Bayoumi et al, 2022). Cannulas can be re-sited as required; they should not be re-sited purely based on the number of hours since they were placed. Endotracheal cuff pressures should be reviewed using manometry (target: 20-30mm$H_2O$). Reassess tourniquets and undertake tourniquet conversion if able. |
| M | Medications | Ensure medications are given appropriately when required. Consider PIE:<br>Pain: Analgesics<br>Infections: Antibiotics<br>Essential Medications: Anti-epileptics, Parkinson's medications etc |
| A | Administration | Ensure administrative tasks are undertaken. This includes those related to this patient (e.g. documentation & charting vital signs), your medical readiness (e.g. restocking consumables) and your personal or team readiness (e.g. eating and drinking). This also includes preparing for onward transfer of the patient or handing over their care to another team. |
| N | Nursing Care | Nursing care, or perhaps more accurately personal care, means being able to meet all of the daily needs of your patient. SHEEP VOMIT is used to remember these care tasks. |

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| S | **Skin Protection** | Assess skin integrity and risk from external factors, such as sunburn or insect bites. Sunscreen, insect repellent and insect nets are all useful. The Waterlow Score can be used to assess risk of pressure ulcer development. |
| H | **Heat Management** | You must avoid hyper- and hypo-thermia for your patient. |
| E | **Elevate Head** | Elevate the patient's head, or head of the bed, by at least 30°. For spontaneous ventilating patients, semi-recumbent positioning increases functional residual capacity and oxygenation (Mezidi & Guérin, 2018) while reducing the work of breathing and reduces the risk of aspiration when swallowing. Consider imaging optic nerve sheath if raised ICP suspected. |
| E | **Exercises** | Patients should undertake a full range of motion exercises every 8 hours, including the ankles, knees, hips, wrists, fingers, elbows and shoulders. |
| P | **Pressure Relief** | Pressure injuries can occur in as little as 30 minutes. Patients should be repositioned and pressure areas checked every 2 hour. Areas of non-blanching erythema should be outlined with a marker and clearly documented. Such at risk areas should be padded, and the patient repositioned regularly. |
| V | **Vital Signs** | Physiological observations should be taken and documented regularly to identify trends. Time intervals depend on acuity. |
| O | **Oral Hygiene** | Teeth should be brushed twice a day. Unconscious patients may need more complex oral hygiene care including suctioning. Applying moisturiser to the lips may be needed. |
| M | **Massage** | Calf massage and ankle plantarflexion and dorsiflexion are effective mechanical prophylactic interventions for deep vein thrombosis (DVT |
| I | **Ins and Outs** | Monitor food and fluid intake and urine output. Minimal urine output must be 0.5–1 ml/kg/hr (30–50 ml/hr), but a target of 100–200 ml/hr might be more appropriate. |
| T | **Turn / Cough / Deep Breath** | Patients should regularly cough and take deep breaths to avoid atelectasis and consequent pneumonia (Ostberg et al, 2018). Ensure analgesia allows deep breathing. |

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**Omental taping to reduce risk of pressure injury**


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